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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/717,622	11/21/2003	Satoshi Takahashi	100353-00179	8618
4372	7590	10/06/2004	EXAMINER	
ARENT FOX KINTNER PLOTKIN & KAHN 1050 CONNECTICUT AVENUE, N.W. SUITE 400 WASHINGTON, DC 20036			HOANG, HUAN	
			ART UNIT	PAPER NUMBER
			2818	

DATE MAILED: 10/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/717,622

Applicant(s)

TAKAHASHI, SATOSHI

Examiner

Huan Hoang

Art Unit

2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-4 and 7 is/are allowed.
- 6) ☒ Claim(s) 5, 6 and 8 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

The Response filed on 07/27/04 has been received and entered.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 5, 6 and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Kawamura.

Kawamura discloses a nonvolatile semiconductor memory device having all the elements and steps as recited in claims 5, 6 and 8 as follows:

- a memory cell transistor which is configured to stored two bits at respective ends of an electric charge capturing film (second bit and third bit, column 6, lines 30-34); and
- a potential switching circuit which supplies a first drain potential ($V(SD2)=0$, column 7, line 39) to the memory cell transistor at a time of a read operation (column 7, line 33), and supplies a second drain

potential ($V(\text{SD2})=1.6\text{V}$, column 13, line 12) higher than the first drain potential at a time of a write-verify operation (column 13, line 11).

Allowable Subject Matter

3. Claims 1-4 and 7 are allowed.

Claims 1-4 and 7 recite a nonvolatile semiconductor memory device and a method of writing in respect of a nonvolatile semiconductor memory device comprising a comparator which checks a data status by reading data of the first bit and a potential switching circuit which changes potential conditions for writing of the second bit in response to whether the data status is 0 or 1. The prior art does not teach or suggest the limitations recited in the above claims.

Response to Arguments

4. Applicant's arguments filed 07/27/04 have been fully considered but they are not persuasive.

Applicant stated:

"In contrast, the memory cell transistor of Kawamura is an n-type transistor having n-type source/drain regions SD1 and SD2 formed on the p-type substrate. As a result the region SD1 serves as a drain in the read operation described in column 7, and the region SD2 serves as a drain in a drain in the write-verify operation described in column 13.

Kawamura teaches applying a drain potential of 1.6 V at a time of a read operation and applying a drain voltage of 1.6V at a time of a write-verify operation. Consequently, this reference uses the same drain potential at the time of a read operation and at the time of a write-verify operation.”

In response to this statement, Kawamura does not teach applying a drain voltage of 1.6V at a time of a read operation. Nowhere in Kawamura discloses that SD1 is a drain in a read operation and SD2 is a drain in a write-verify operation as stated by Applicant. In fact, Kawamura teaches “the first and second regions SD1, SD2 are used either as sources regions or drains regions” (column 2, lines 14-16). If SD2 is considered to be a drain in a read operation, SD2 is also considered to be a drain in a write-verify operation. Therefore, the rejections to claims 5, 6 and 8 are still proper.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ogura et al. discloses a fast program to program verify method.

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Huan Hoang whose telephone number is (571) 272-1779. The examiner can normally be reached on Mon-Fri 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Huan Hoang
Primary Examiner
Art Unit 2818

HH
9/30/04.